

3. **(ORIGINAL)** A polypropylene according to claim 1 or 2 wherein the grafting agent is selected from the group consisting of bismaleimide derivatives; mono-, di-, tri-, tetra-acrylate or methacrylate compounds; organosilane compounds of the formula $A_{4-n}SiR_n$ where A are identical or different acrylate or methacrylate or vinyl groups, where R are identical or different alkoxy or acetoxy groups and where n is 1, 2, 3 or 4; α, β -unsaturated acids and their anhydride derivatives; non-conjugated dienes such as 1, 5-hexadiene, norbornadiene and dicyclopentadiene, dipentene; polybutadiene and copolymers containing polybutadiene blocks; butadiene based polymers and copolymers; polyisoprene and copolymers containing polyisoprene blocks; isoprene based polymers and copolymers; polyethylene; C₄₋₂₀ α -olefins either linear or branched; styrene or divinylbenzene; ethylene-propylene rubbers and ethylene-propylene-diene rubbers; di-furnane derivatives; ester derivatives of fatty acids; and vinylpolybutadiene.

4. **(CURRENTLY AMENDED)** A polypropylene according to claims 1 or claim 2 ~~any one of claims 1 to 3~~ wherein the grafting agent comprises from 0.01 to 5 wt.% of the weight of the polypropylene.

5. **(CURRENTLY AMENDED)** A polypropylene according to ~~any one of~~ claims 1 or claim 2 to 4 wherein the grafting agent comprises tetravinyl silane.

6. **(ORIGINAL)** A polypropylene according to claim 5 wherein the tetravinyl silane is in an amount of from 0.01 to 1 wt.% based on the weight of the polypropylene.

7. **(ORIGINAL)** Polypropylene having a branching index of lower than 0.7 and an improved melt strength obtained by irradiating a polypropylene with an electron beam energy of at least 5 MeV with a radiation dose of 5 to 100 kGray in the presence of a grafting agent.

8. (CANCELLED)

9. (NEW) A polypropylene according to claim 1 wherein said radiation dose is at least 10 kGray.

10. (NEW) A polypropylene according to claim 9 wherein said electron beam energy is at least 10 MeV.

11. (NEW) A polypropylene according to claim 10 wherein said radiation dose is at least 15 kGray.

12. (NEW) A process for the production of polypropylene having an enhanced long chain branching and a high melt strength comprising:

- a. providing a mixture of polypropylene and a grafting agent;
- b. irradiating said mixture of polypropylene and grafting agent with an electron beam having an energy of at least 5 MeV with a radiation dose of 5 – 100 kGray to produce a polypropylene polymer having a enhanced long chain branching; and
- c. recovering polypropylene polymer having a branching index which is lower than the branching index of a linear polypropylene.

13. (NEW) The process of claim 12 wherein said polypropylene is irradiated with an electron beam having an energy level of at least 10 MeV.

14. (NEW) The method of claim 13 wherein said polypropylene is irradiated with a radiation dose of at least 10 kGray.

15. (NEW) The method of claim 13 wherein said polypropylene is irradiated within a